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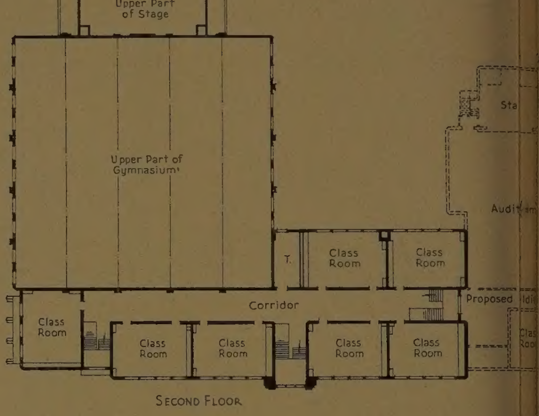
ARCHITECTURAL CONCRETE

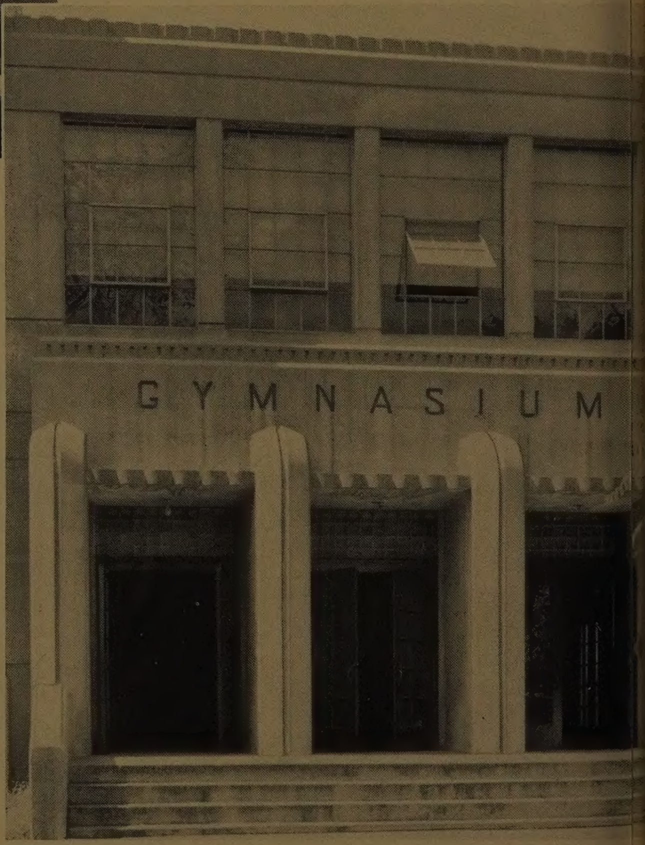
OLUME TWELVE NUMBER TWO

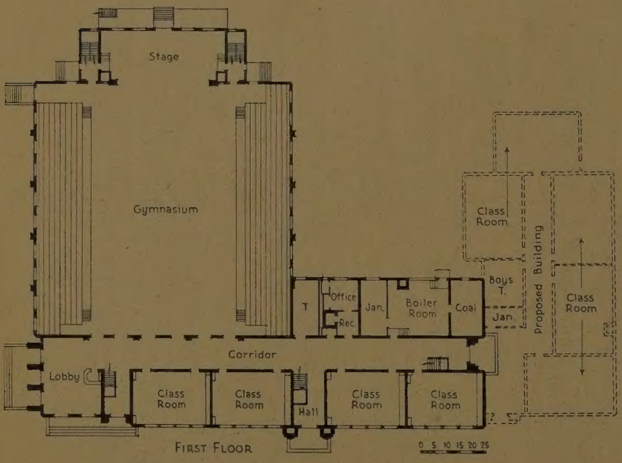
(*Front cover*) *Sandoval Community High School serves a*
able rural district surrounding Sandoval, Ill. Well-balance
characterize the design of this architectural concrete school.

Ornamental detail on the Washington School is largely confined to rustications, some of which serve also as construction joints.



The entrance to the gymnasium of Washington School is
between flanking pylons and protected by a canopy with ree





The addition to the Washington School will house five classrooms on the first floor and a small auditorium and one classroom on the second floor. See plan at upper right.

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Architectural
CONCRETE

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Four Southern Illinois Schools

By William R. McCoy*, AIA

N recent years more and more of the country's famed "little red schoolhouses" have been replaced by the big hite school building. Among the communities exchanging e traditionally picturesque former seats of learning for the tractive functional and better-equipped institutions of day are the towns of southern Illinois. As a result of exten- ve building, architectural concrete structures are now ousing the rising generations of school children in many nall Illinois towns such as Carmi and Sandoval.

We have designed two such schools for Carmi and one for andoval which have been serving their respective com- unities for some time. Now, because the little city of armi has almost doubled in population in the last five ears, additional school facilities have become urgently cessary. The Board of Education now contemplates making additions to the two existing buildings and constructing a third school to serve the west side of the city. We have been commissioned to prepare studies for the additions and the new building; these studies are shown in accompanying illustrations. Of necessity the additions to the present buildings will be of architectural concrete, but complete satisfaction from the standpoint of first cost, maintenance and all-round performance of the existing buildings has prompted the design of the proposed west side school for architectural concrete also.

The schools in Carmi and Sandoval are simple in line and detail as buildings should be in which young minds are to be formed. They were built for a completely functional

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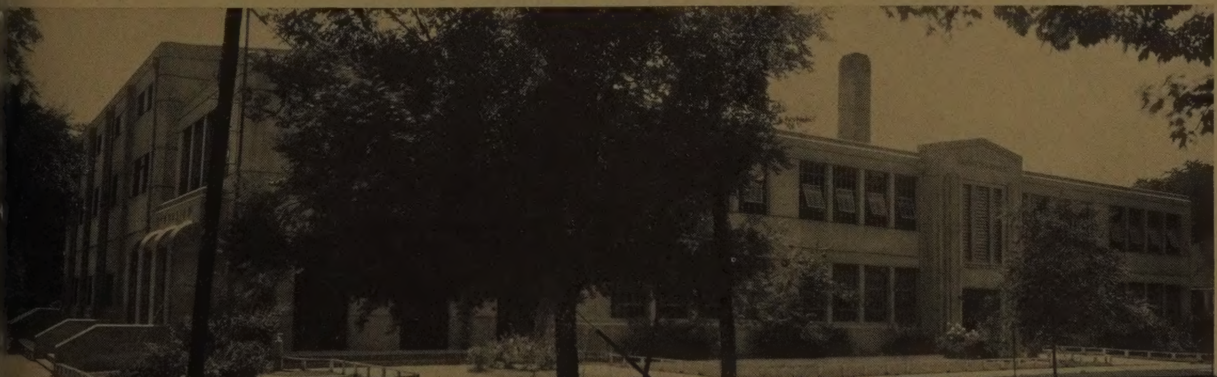
*McCoy and Wilson, architects, Mt. Vernon, Ill.

he Washington School, Carmi, Ill., is the larger of two architectural concrete schools in that small city designed by McCoy and Wilson, chitects in Mt. Vernon, Ill. Growing population necessitated a building addition, which is shown in the perspective and floor plans.



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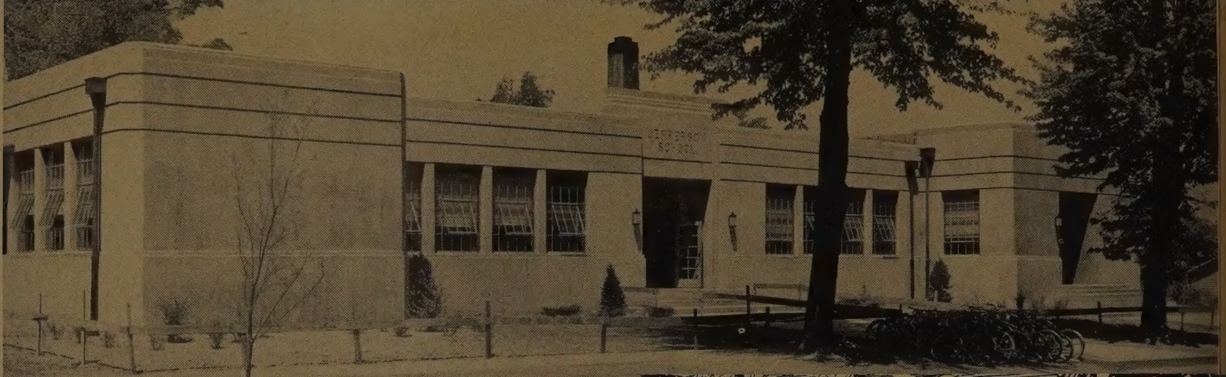
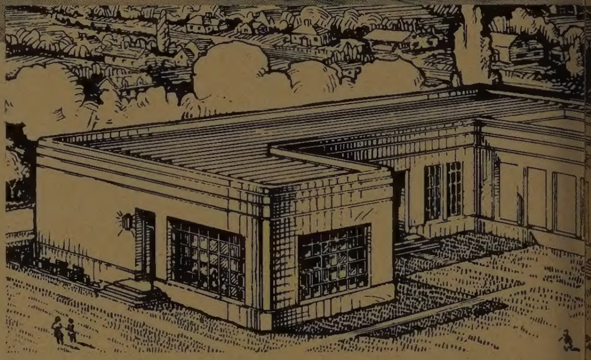


Jefferson School in Carmi is also too small for the needs of that fast-growing community, so wings will be added at each end as shown in the perspective and the plan below.



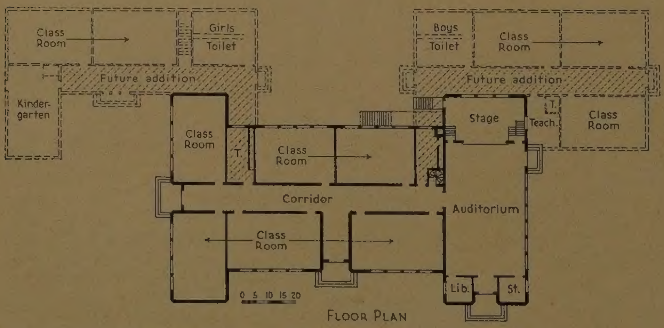
purpose and retain that appearance. The style of architecture should probably be called contemporary.

The two Carmi schools are the Washington and the Jefferson. The Jefferson is much the smaller, being about one-fourth the size of the other and costing proportionately. It has six rooms in its one story and is used by the lower grades of Carmi's school population. Following out the utilitarian aim of the building, decoration has been held to a minimum. There are the rustications above the windows, a row of dentils along the parapet over the three entrances, the incised lettering above the doorways—and no more.

The Washington school has a like simplicity of decoration. Its two-story front has a dentil band at the coping and over the entrances. Other than this the decorative detail consists primarily of rustications, which in some locations also serve as horizontal construction joints. Narrow glass block light panels extending from the lintel over the main entrance to the second-story ceiling combine with flanking pilasters to provide a vertical accent to the otherwise horizontal lines of the west elevations.

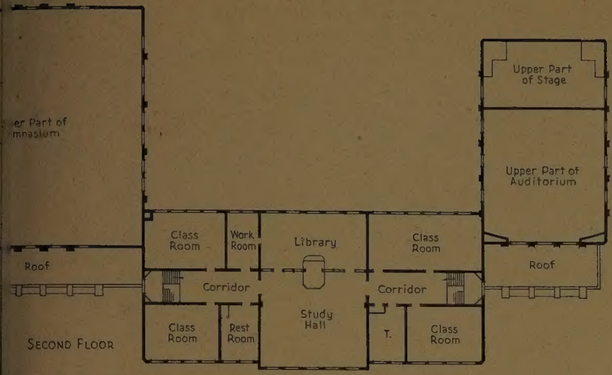
The school's gymnasium is located at the north end of the building. It has an entrance of its own so it can be used at any time with a minimum of conflict with students going to and from regular classrooms. Its entrance is marked by grooved pylons connected by a narrow concrete canopy with reeded edge. The gymnasium will seat 2,000, almost half of Carmi's population, and serves as an auditorium for public gatherings. As such it is admirably suited to the community's needs.

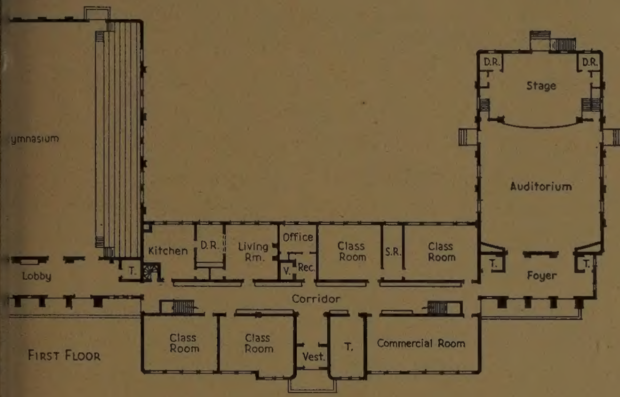
The Sandoval building, in a village of less than 2,000 people, is the largest of the schools with which this article is concerned. Although this may seem surprising, the reason was the desire of the Sandoval community to put up a lasting structure which would really serve the needs of the population of the surrounding countryside for many years. The result of this easily understood wish is the fine building



Classroom capacity of Jefferson School will be doubled by the addition of two wings. A cafeteria seating 200 will be located in the basement.

Simplicity is the keynote of the design of all Carmi schools as shown by this close-up of the auditorium entrance of Jefferson School.





anding at the town's edge. It will remain to serve its purose long after the far-seeing community leaders are gone.

The community high school was designed to separate ompletely the functions of gymnasium and auditorium so at school gymnasium work could be in progress while a ublic gathering was being held in the auditorium. Thus, e classrooms are housed in the building's central and main ructure and are flanked by two wings housing, respecvely, the gymnasium and auditorium.

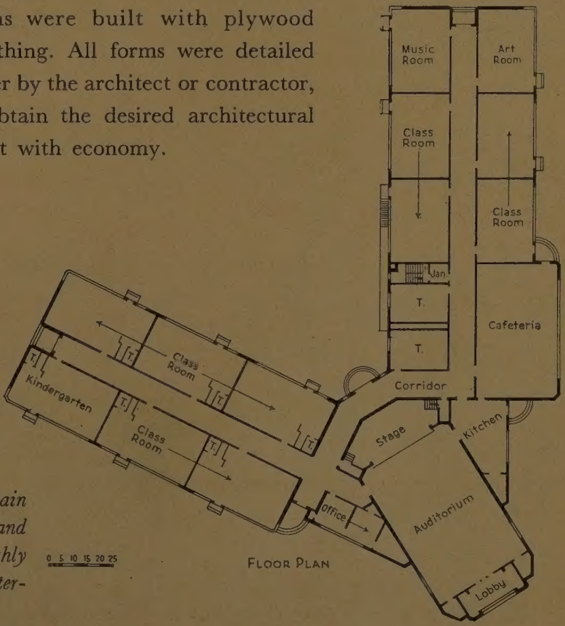
There is perhaps even less decoration in the Sandoval structure than in the Carmi buildings. In all three cases, because of the simplicity of design, only wood molds were used. At Sandoval, especially, the building depends upon its well-balanced proportions rather than on ornamentation for its aesthetic appeal. The main entrance is recessed under a projecting spandrel and canopies between flanking pylons shelter the doorways to auditorium and gymnasium.

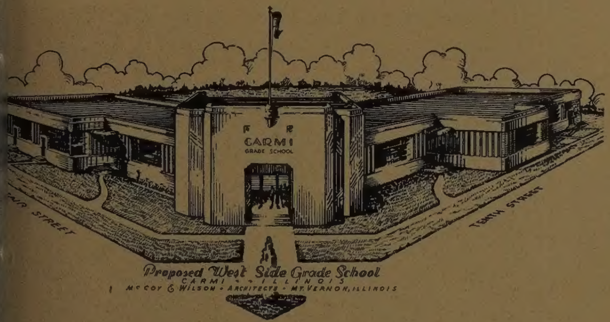
Flanking the main part of the school in Sandoval are the gymnasium and the auditorium as shown in the plans at the left.

Control joints were used quite liberally in all three buildings with half of the reinforcing steel severed at the joints. These control joints serve their purpose, but were the structures to be rebuilt we would increase their number.

Other construction details for all three units are similar. All have concrete spread footings, 8-in. architectural concrete walls, and cast-in-place concrete joist floors and roofs with concrete filler blocks. This assures firesafety.

Aggregates were crushed limestone and sand to which was added fine plasterer's sand to improve workability and reduce bleeding. All concrete was proportioned by weight, placed by buggies and hand-spaded. Wall forms were built with plywood sheathing. All forms were detailed either by the architect or contractor, to obtain the desired architectural effect with economy.




CARMI
GRADE SCHOOL
STREET
TENTH STREET
Proposed West Side Grade School
CARMI · ILLINOIS
McCOY & WILSON · ARCHITECTS · MT VERNON, ILLINOIS

The proposed grade school for the west side of Carmi will maintain the same simplicity of design as the other schools in Carmi and Sandoval designed by McCoy and Wilson. The site is a roughly triangular lot so the auditorium is conveniently located at the intersection of two streets.

Construction Goes Ahead in Bryan, Texas

By R. B. Butler, Contractor

CONSTRUCTION balked by material and labor shortages is no longer news. What is news is the story of jobs completed, of the contractor able to meet the needs of clients without expensive delays. With that in mind, ARCHITECTURAL CONCRETE presents this account of how one contractor kept much needed nonresidential building construction going in a small East Texas community. The example may well be emulated on a larger scale.

EDITOR

Within the past year we have completed seven architectural concrete buildings. Six are located in Bryan, Tex., the seventh in nearby College Station. While the number of jobs or their size may not be impressive to the big city contractor, it should be remembered that Bryan is a town of only 16,500 people, while College Station has but 3,000.

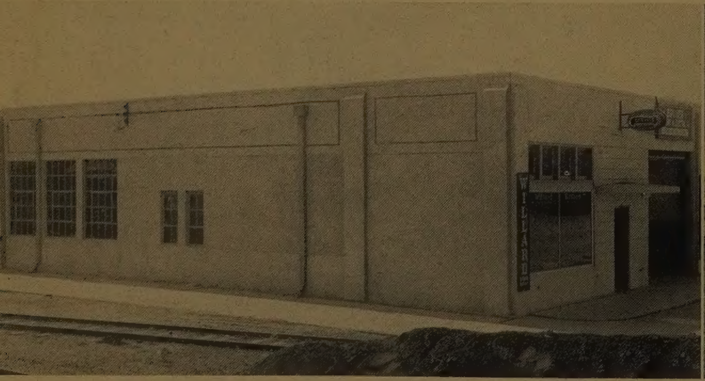
All buildings are strictly functional, designed to meet their owners' needs without expensive embellishment. They enabled our clients to take early advantage of immediate postwar business opportunities. Although no two owners were engaged in the same occupation, all shared a desire for speedy and economical construction that would allow them to carry on their business and, in some instances, expand their activities.

The buildings discussed here are all for commercial or industrial occupancy. Some have drilled foundations extending 10 to 16 ft. below grade to reach a good sand stratum, while others have spread footings. In general, the concrete walls are 8 in. thick and reinforced with the norma amount of temperature reinforcement.

A year ago we had not expected to confine ourselves t architectural concrete construction. In fact, the specifications for the first job of the year designed by P. G. Norton Bryan architect, provided for concrete only in the foundation. However, the brick specified for the job, together wit the mason labor needed to lay it, proved unavailable. Th problem presented by that situation required an immediat solution because the lease our client, the Bruner Battery an Electric Co., had on the building he was occupying wa shortly to expire. Delay in completing the new buildin would have meant serious interruption of business an considerable financial loss.

As an answer to the problem we recommended architectural concrete construction. Necessary materials were available. There was adequate skilled labor for form buildin and common labor to mix and place the concrete, and w ourselves were experienced in its use. With our client approval, plans were accordingly revised and we built th 40- by 75-ft. building well within the contract time.

The result not only pleased the owner, but indirectl brought us our second client. The latter, the Beard Implement Co., had planned a structure of similar size for storag of farm machinery. Because the building was only for storage purposes it was designed to be as inexpensive as possible The original design contemplated corrugated iron sheath



First of the 1946 architectural concrete buildings constructed by R. B. Butler, contractor in Bryan, Tex., was the Bruner Battery and Electric Co. job designed by P. G. Norton, architect of Bryan.

Ability of the contractor to complete the Bruner Battery an Electric Co. building on time and at reasonable cost led t another cast-in-place architectural concrete job for the Beard Implement Co. of Bryan.

*ie salesroom part
the Bernath Mo-
. Co. building
igned by Archi-
ts Norton and
sper was con-
ucted of cast-in-
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ncrete, but the
vice part was
lt by the tilt-up
thod.*

g for the walls, but it was found that such construction did
t meet the Bryan building code requirements for a build-
g located within the fire zone. The low-cost, firesafe
nstruction of the Bruner Battery and Electric Co. building
s brought to the attention of the Beard Implement Co.,
th the result that we got the contract and completed
other architectural concrete building without any delay
cause of scarce materials or labor.

We next built an office building for the Ranger Corp. of
yan. This was a small L-shaped structure. It differed from
previous two jobs in that precast concrete joists were
ed in building both the floor and roof. The joists were cast
our own shop in wood forms. The walls have rigid insula-
n furring and an acoustical as well as insulating ceiling
s provided. In contrast to the two buildings previously
cussed, which were strictly utilitarian both inside and out,
s small office building was nicely appointed in every way
d intended to present an attractive appearance at moder-
cost. There was no other way under existing conditions
to meet the owner's requirements except with concrete construction.

The next project was a store building for London Bros. Designed by P. G. Norton, architect, and S. C. P. Vosper, associate, its construction is essentially the same as the other buildings described but more attention was given to the architectural design.

Working once again with architects Norton and Vosper, we next built a garage and salesroom for the Bernath Motor Co. Here we combined the customary method of architectural concrete construction with tilt-up construction, using the latter to build the service section of the garage. We do not claim originality for the tilt-up method, which we first heard of being used on a job in Minnesota*, but we expect to use the method frequently as it proved to be highly satisfactory and economical.

Building by the tilt-up method, we first cast the founda-

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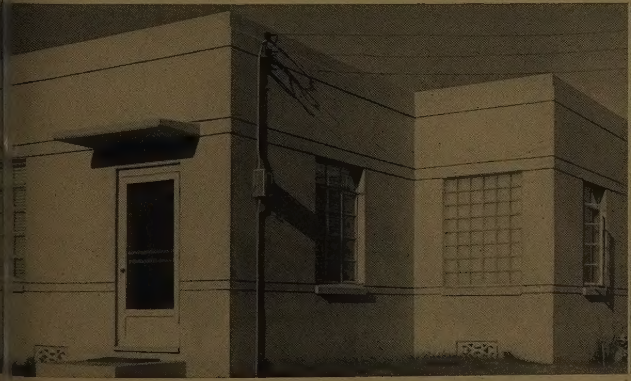
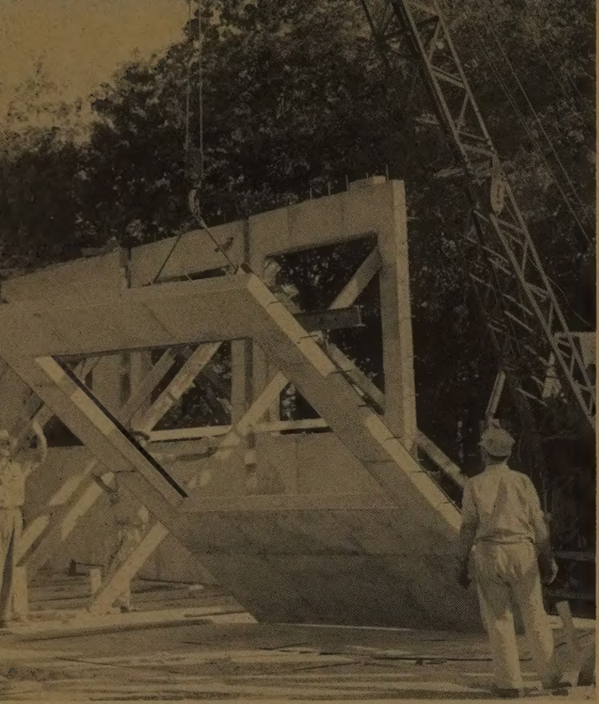
*See "Architectural Concrete in Minnesota" by Louis Pinault in this issue.

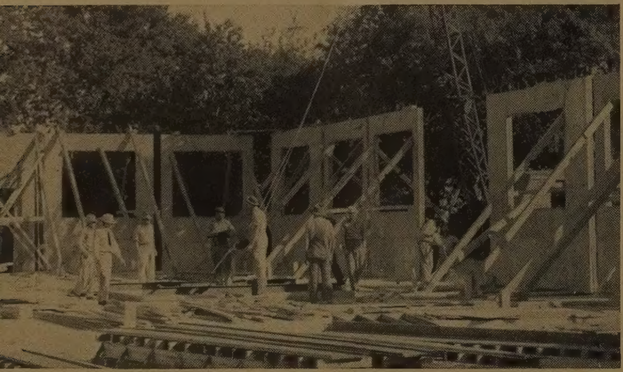
*cording to Contractor Butler there was no other way under
sting conditions to meet the requirements of the Ranger Corp.
a moderate cost, attractive office building except with architec-
al concrete.*

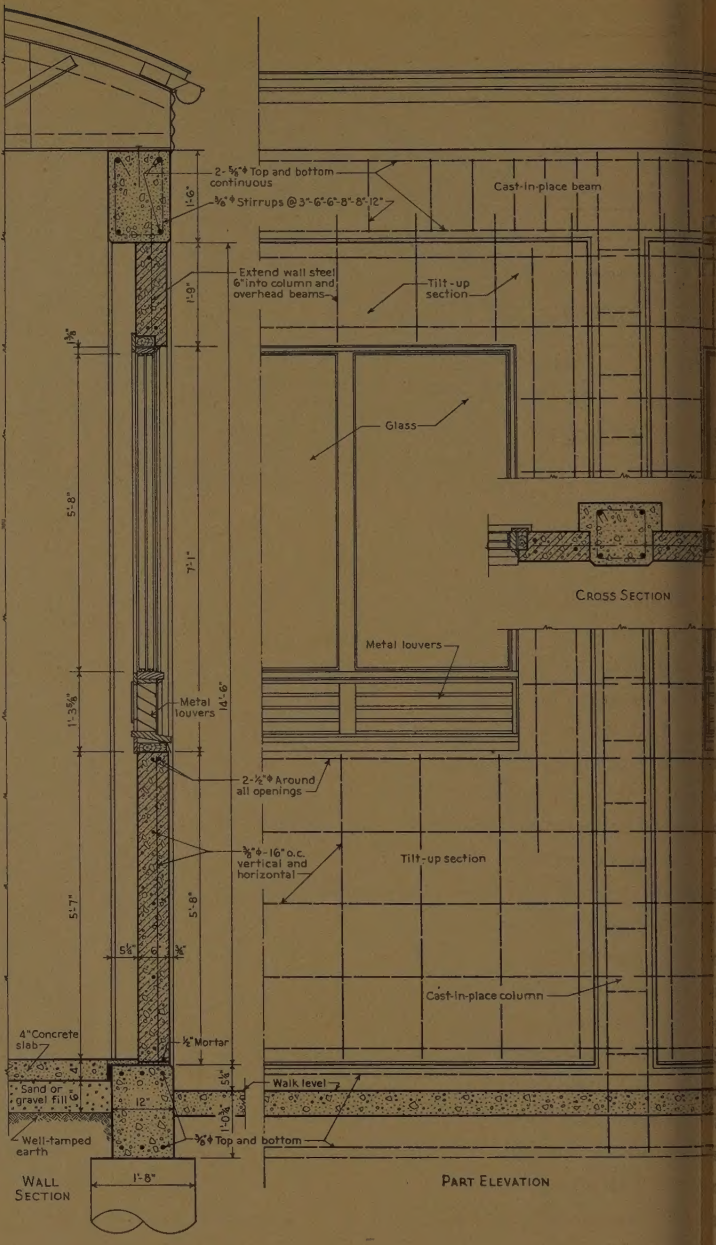


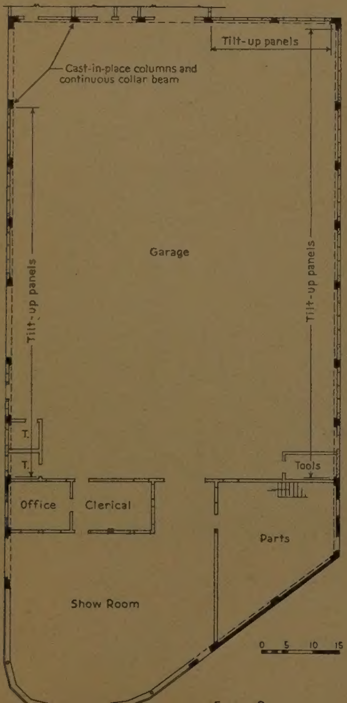
Architects P. G. Norton and S. C. P. Vosper of Bryan designed the store building for London Bros. which was constructed by Contractor Butler using conventional architectural concrete construction methods.



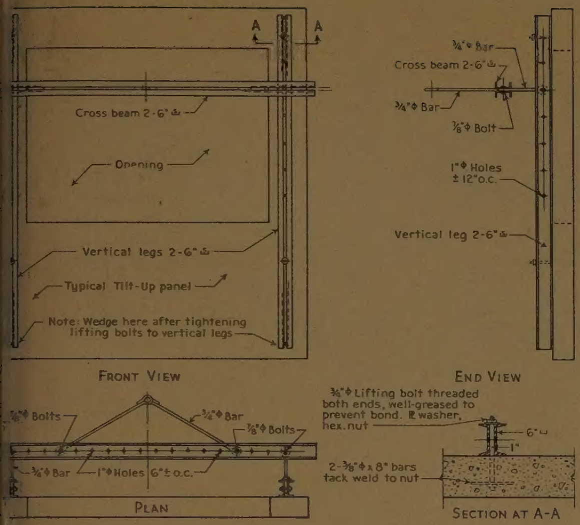
Panels were cast on the floor and tilted into position, using a self-propelled crane. Reinforcing steel projecting from the top and sides of the panels anchors them securely to the cast-in-place columns and continuous spandrel beam.







The walls of the Bernath Motor Co. building, constructed by the tilt-up method at a marked saving in form l are excellent in appearance.



Details of lifting rig for tilting precast panels into place.

n and the floor slab as usual. Next, ¼-in. plywood panels re laid on the floor to prevent the wall concrete from nding to the floor. If the plywood had not been available her means of breaking the bond could have been used, but had the material and preferred the pleasing interior xture obtained by casting the concrete against the ply- od. To the plywood were secured edge forms or bulk- ads the height of the wall thickness. Door bucks and ndow frames were then placed in their proper positions thin the form lying on the floor. The reinforcing steel was on chairs so it was held in the center of the slab. The bars re allowed to project 6 in. at the sides and top of the form act as dowels between the tilted-up panels and the cast- place columns and the spandrel beams.

High-early-strength concrete was placed in the forms and s finished by floating and troweling just as would be done a floor slab. The panels were cured five days and were ted up into position 7 to 10 days after placing the con- ete. The lifting rig is shown in an accompanying illustra- n. The frame was attached to the panel with two or ee bolts, depending upon the size and shape of the panel ing lifted, for each pair of channels to minimize erection esses. The bolts fastening the channels to the panels were htened before wedging the bottom ends of the channels. is was done to be sure no stresses would be induced in the bs when tightening the bolts.

Because of equipment embedded in the floor slab it was t possible to cast all wall panels adjacent to their final sition in the wall. No difficulty, however, was experienced moving the panels into position with the self-propelled ane used for tilting the panels into place.

Timber bracing secured to the projecting ends of the rtical reinforcing steel held the panels in position until e columns were cast in place. Bottom edges of the panels re calked with a stiff portland cement mortar.

The salesroom part of the building across the front was constructed in the conventional manner and at the same time the spandrel beam at the top of the tilt-up panels was cast in place, thereby tying the entire structure together.

This small factory was built by tilt-up method for K. E. Woods, Bryan, with same lifting rig and equipment as for Bernath Motor Co. job. A sizable saving was made, compared with other types of construction.

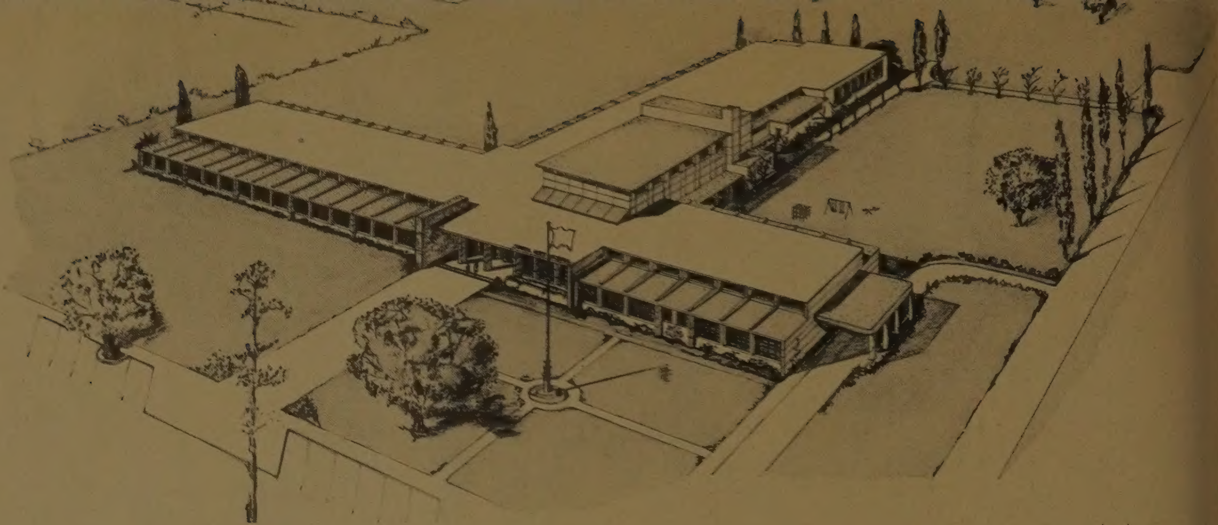
In nearby College Station, Tex., Contractor Butler built another store building designed by William E. Nash, architect in Bryan. The usual cast-in-place architectural concrete procedure was employed.

It is estimated that 5,000 f.b.m. of form lumber was saved by using the tilt-up method for that part of the building for which it was adapted. The saving in form labor in addition to the lumber and the cost of placing the concrete represented an amount sufficient to merit careful consideration in design of structures for which this type of construction is practical.

Our sixth job, a small factory built for K. E. Woods of Bryan, bears out our belief that the tilt-up method offers fast, low-cost construction. The owner wanted the maximum amount of space for the minimum amount of money, and since the building was ideally suited to it we recommended the tilt-up method. Estimates made upon the structure's completion, for which the same lifting rig and equipment were used as on the Bernath Motor Co. building, show that the owner was able to realize a considerable saving as compared with conventional construction.

Last and most current example of our efforts is the clothing store for Leon B. Weiss built at College Station and designed by William E. Nash, architect of Bryan. The construction methods in this job followed conventional practice.

Our experience during the past year has convinced us that construction can go ahead even under the most adverse conditions if architects and contractors will use their ingenuity and not think it necessary to stick to old methods of construction just for old times' sake.



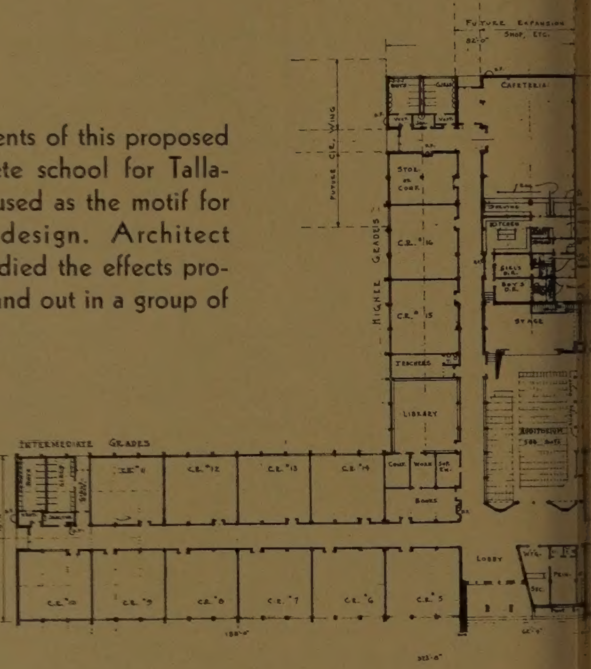
SOUTH CITY ELEMENTARY SCHOOL

Leon County School Board

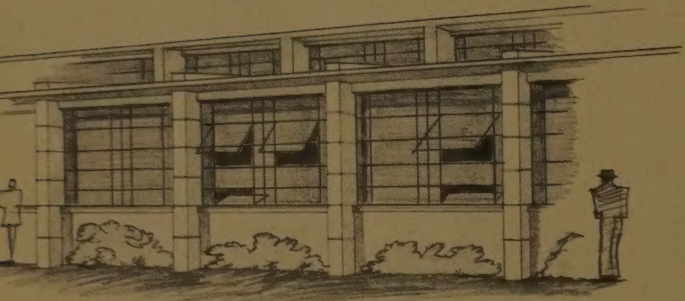
Tallahassee, Fla.

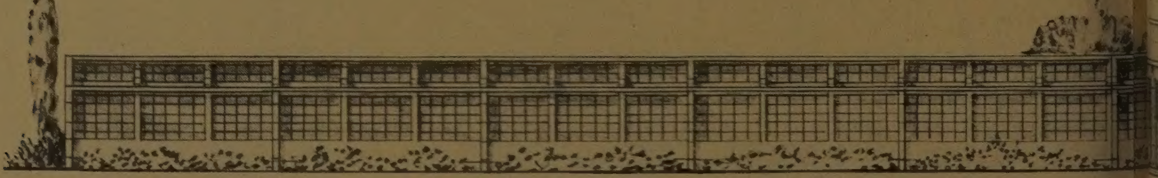
PRENTISS HUDDLESTON, architect

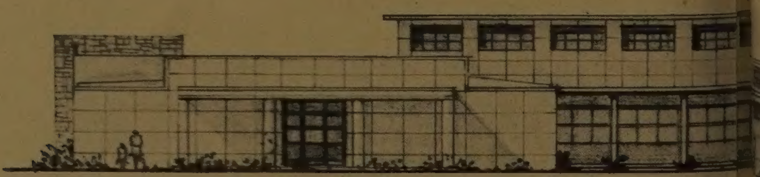
The structural elements of this proposed architectural concrete school for Tallahassee are frankly used as the motif for the architectural design. Architect Huddleston has studied the effects produced both inside and out in a group of interesting sketches.

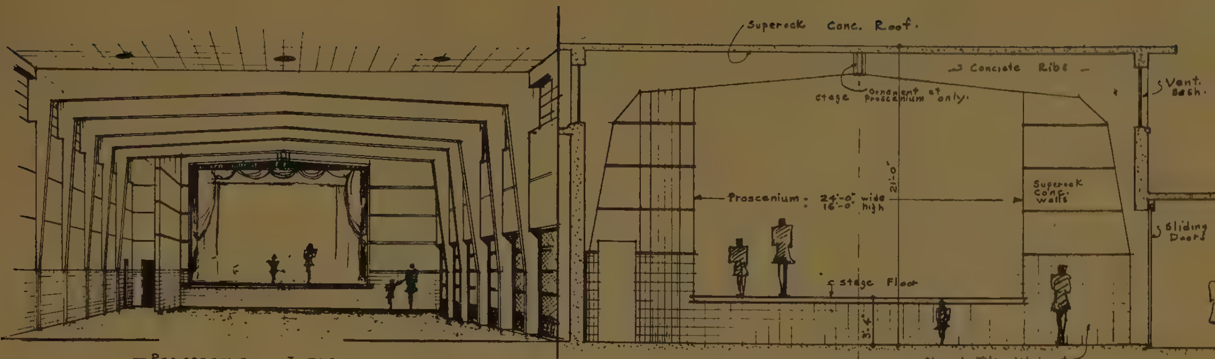


FLOOR PLAN
SCALE 1/16" = 1'-0"





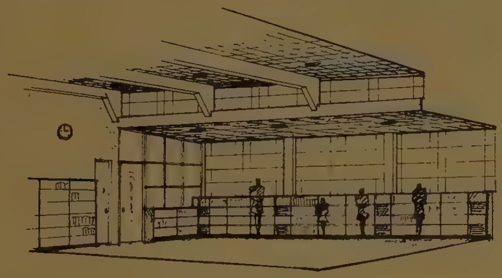




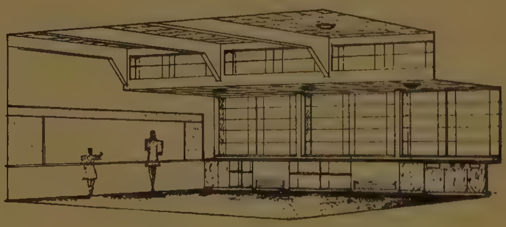
— PERSPECTIVE - INTERIOR

ELEVATION TOWARDS STAGE
Scale 1/4"=1'-0"

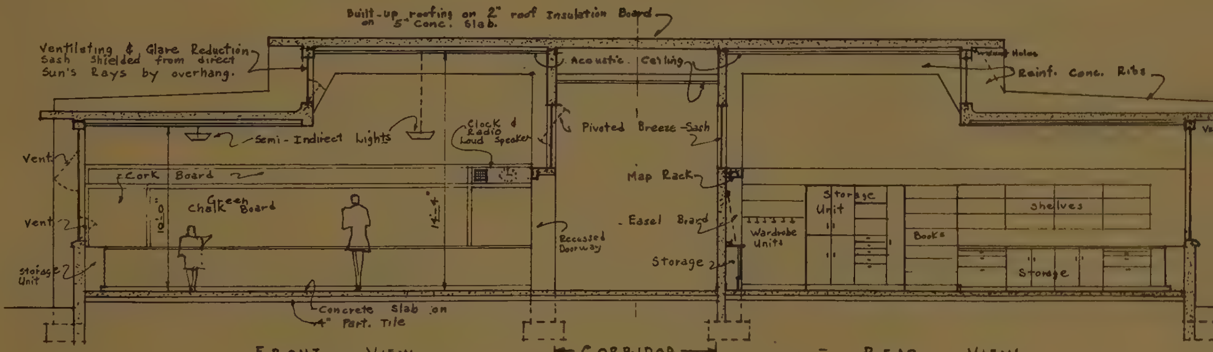
AUDITORIUM ~ ACTIVITY ROOM



LIBRARY PERSPECTIVE

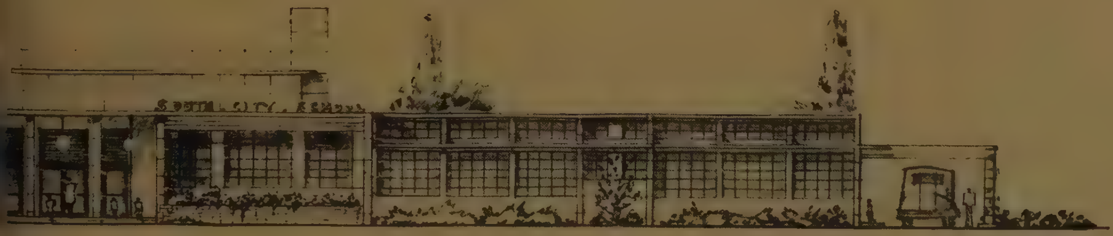


CLASS ROOM PERSPECTIVE



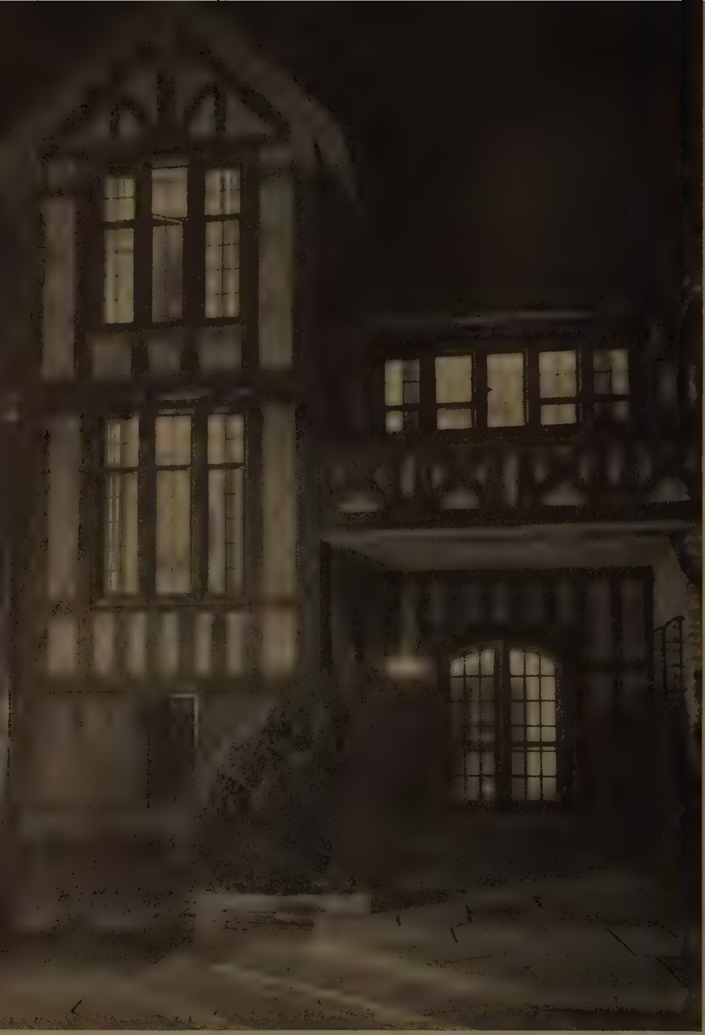
FRONT VIEW — CORRIDOR — REAR VIEW

CROSS SECTION TYPICAL CLASS ROOM WING
Scale 1/4"=1'-0"



The Principia—
College of Liberal Arts

By Van A. Denison, Architect*



At The Principia—College of Liberal Arts, Elsah, Ill., Architect Bernard Maybeck of San Francisco has used concrete in an unusually charming way to create a group of buildings designed in the tradition of the old English manor house. Concrete, the principal structural material of the buildings, is combined architecturally with half timbering, brick and stone, as shown here in this night view of the entrance to Minnie Morey Howard House. The late Henry Dewell was the structural engineer and Dickey Construction Co. of St. Louis the contractor for all buildings on the campus.

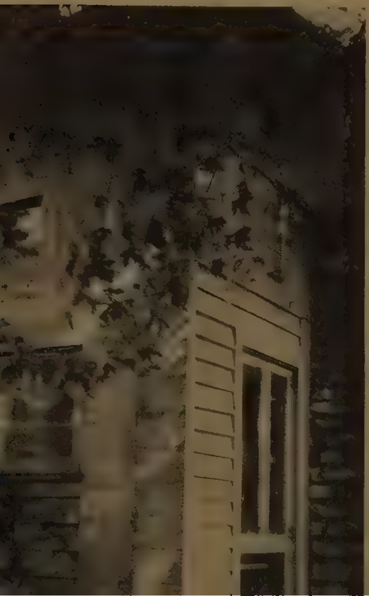
Nineteen forty-six is the year in which people would have liked to build. Unfortunately, a good many could not. Even more unfortunately, a good many of those who did regretted it because of shortages, priorities and substandard materials induced by disturbed postwar conditions.

Not one of these is Principia College, whose campus is located at Elsah in southern Illinois just 40 miles north of St. Louis, Mo.

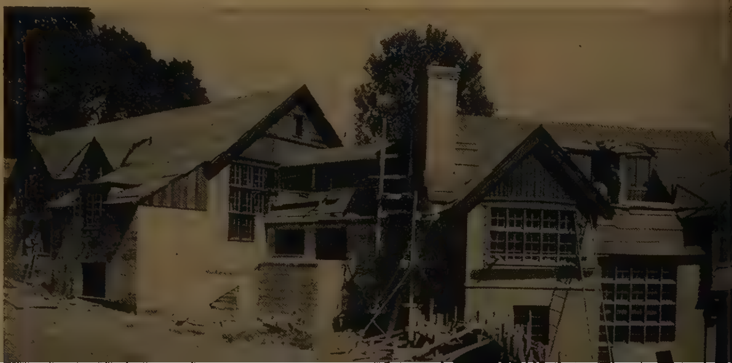
Principia last year not only built, but also built well. In place of Quonset huts too often raised to meet emergency conditions, it has erected a reinforced concrete dormitory for women and three other residence buildings. All are permanent structures variously demonstrating the use of concrete as an architectural as well as a structural material. They fit gracefully into the campus' pattern of studied informality which admirably captures the charm, beauty and appeal of a small English village.

In proceeding with its building program in 1946, Principia encountered shortage difficulties just as others did. However, the college was able to go ahead when others were stopped because it used architectural concrete as principal building material. Building with concrete for Principia meant the difference between building and not building.

The college's fortunate position in this respect resulted from a decision made by its trustees back in 1935. It was then decided to base certain construction on reinforced concrete. This happy choice of a decade ago was more than fortunate when construction started last year. It enabled



The students call the model building in which various concrete textures and construction ideas were tried "Mistake House". Here an area formed with beveled siding contrasts with another formed with square-edged boards.



A construction view of the new women's dormitory shows how dark-stained wood is being used in the gables in pleasing contrast to the light-colored concrete.

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*Supervising Architect, The Principia College.

The concrete walls of A. G. Cox Cottage have an attractive board-marked texture.

Rear view of Cox Cottage shows the strongly board-marked texture used in all campus construction.

rincipia to proceed with plans without interruption even hen the full force of the building materials shortage made self apparent. The use of reinforced concrete in the current nstruction is, therefore, a continuation of previous prac-ce in building the permanent structures of Principia's mpus. These now number 15 with 3 more to be built.

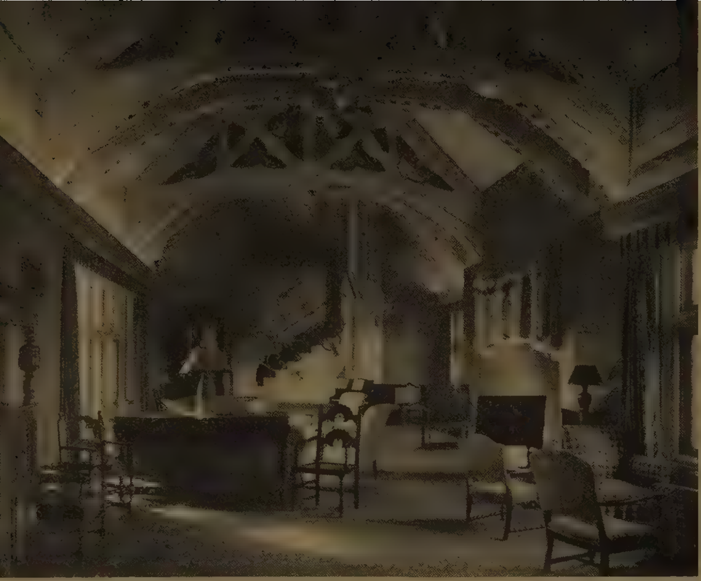
All buildings of the original group erected in the early 's were designed by Bernard Maybeck, architect, of n Francisco, a man widely experienced in the varied uses which concrete can be put. He supervised Principia's arly construction and left behind a "model" building in hich were detailed a variety of types of concrete workman-ip, examples which were later reproduced in ornamental and useful fashion throughout the campus' structures.

This small building of queer appearance—dubbed "Mis-ke House" by the student body—is filled in and out with l sorts of concrete effects, both decorative and functional. nside, overhead exposed concrete beams lead the eye to a ncrete fireplace noteworthy for its massive ornamental nokehood of concrete. Outside, concrete walls having a latively smooth board-marked finish suddenly become ncrete walls of clapboard design. The boards used to produce the latter effect have been half removed and half left in place to show how the surface was produced. To enter the single room of the small upper story, you must climb a concrete stairway on the building's outer wall and enter from a small concrete balcony.

This seeming architectural jest is not that, but a complete illustration in miniature of Maybeck's plans for Principia's buildings. The latest fruit of these plans is the new dormitory. In it and the other buildings of Principia's campus are demonstrated a number of construction possibilities available when working with concrete. Most of these features were first tried out in Mistake House.

In 1940, upon his retirement from active practice, Mr. Maybeck was succeeded by Henry H. Gutterson of San Francisco, whose first building on the campus was Cox Cottage, an architectural concrete structure built in the style of an English cottage. Here one-story concrete walls retain the attractive board finish of the wood forms, the effect heightened by the slight variation in thickness of the 1x6-in. formboards to produce a definite line marking. Above, the dormer gables of the roof are of concrete so treated as to have the appearance of stucco and half timbers.

The architectural concrete walls of the new women's dormitory under construction in 1946 are marked at intervals by half timbers of oak.



Living room of Agnes Anderson Hall. The interior, even more than the exterior, reveals the extensive use of concrete. Roof trusses were cast in wood forms with plaster waste-mold inserts to form the openings.

The same wall finish used in Cox Cottage has also been used in the new women's dormitory. In the latter's interior, as well as exterior, a conscious effort has been made to have the form marks show.

The new women's dormitory, planned some years ago by Mr. Maybeck, is built in the style of a rambling English manor house. It is of two stories except where the rolling nature of the ground exposes the lower story wall of the building. The reinforced concrete structure is marked at intervals by half timbers of 3-in. oak secured in place by heavy brass dowels. Replacing the usual stucco or plaster finish used in English architecture of this type is the distinctive board marking left in the concrete by the forms. In the many gables of the building dark-stained wood has been used in pleasing contrast to the light-colored concrete below.

First building to be erected on the campus was the chapel. Concrete ceiling and balcony soffit, with the grain of the formboards showing and painted white, harmonize with the paneled woodwork and box pews.

The desire to reproduce the grain of the boards in the concrete walls was at one time threatened by a shortage of the 1x6-in. sheathing lumber being used. This was overcome through extensive reuse of the boards on hand, which were carefully cleaned and handled at all times, and through use of plywood wherever the board-marked texture was not part of the design. The use of the latter may be best observed in the recreation room, where 4x8-ft. panels were used for ceiling forms. Deep marking of the plywood grain is firmly imprinted in the ceiling concrete.

One other striking feature of the new building is its two all-concrete stairwells, complete to handrails and landings, one having a board-marked finish, the other plaster.

Expansion joints in the walls were provided where wings join the main part of the building or where there is a change in direction of the building. In constructing them any reinforcement passing through the joints was completely severed and their presence concealed by the angles of the walls. Metal strips were used to form the joints, a fiber filler was provided and the joints were calked with mastic on the exterior.

Expansion joints have been used in all our construction since we started building at Principia in 1931. To date, all have worked excellently, preventing any noticeable cracks attributable to shrinkage or temperature changes. On the basis of this past record we expect a like performance from our new construction.

The new dormitory's roof is of tile-simulating shingles. It is remarkable for its gradation of color, a planned effect sought in all Principia roofs. The floors have been left in their natural concrete state and will be covered with rubber tiling at a later date.

Half timbers or any other wood construction incorporated with the concrete for either decorative or useful purposes were first built according to details on the ground, knocked down, then treated with creosote to prevent swelling and distortion, and finally reassembled and set in place at the site of use. Forms were built around them, and twenty-penny nails were left projecting from the wood members to serve as anchors in the concrete.

In the greater part of the construction, steel forms were used for the walls below grade with wood sheathing above grade on the exterior and the interior wherever exposed. The forms were detailed by the contractor, Dickie Construction Co. of St. Louis, and constructed according to our specifications. To facilitate stripping, all forms were treated with a paraffin-base oil. No other precautions were taken or needed.

Because of the extensive use of concrete in building its campus, recommendations were made to college authorities at they buy outright all steel pan forms used in the con- uction instead of renting them as is customary. This was ne and has proved economical. Carefully cleaned, the rms were used time and again. This acquisition was pecially appreciated when the lumber shortage made it fficult to get material for wood forms.

Our concrete mix, set up by the late Henry Dewell, iginal engineer of the project, was scrupulously followed all times. Scales were maintained on the job and a nstant check taken on the wheelbarrow loads by weight d mark. All concrete was placed from a central tower by eans of buggies.

For coarse aggregate, we used a crushed limestone ob- ned from Alton, Ill. The rock was carefully graded and rticular pains were taken to free it from all dust and eign matter. All sand used came from a nearby Mississippi ver deposit.

Landscaping for the new building is in keeping with that the rest of the campus. Providing the student body with mfortable informality, it is the work of Butler Sturtevant San Francisco. He has provided the usual broad lawns of college campuses and in addition a great profusion of rubbery and trees which surround all buildings. Growing gely unclipped, they have done much to add unexpected ars to Principia's appearance. This is particularly evident the ivy which seems bent on hurriedly capturing each ucture erected.

The new 1946 construction is firesafe as only concrete can . It is a point of pride with Principia officials that all of permanent structures are this way. Providing firesafety d a good deal to do with Principia's extensive use of ncrete as a building material. Responsibility for a large dent body night and day necessarily increases precau- nary efforts for student safety.

The safety characteristics of concrete construction were essed when the erection of the campus buildings was first dertaken. Mr. Maybeck, the architect, and Mr. Dewell, engineer, were both from the West Coast where sturdy nstruction is necessitated by the earth's occasional insta- ity. Consequently, they were more than usually interested the geologic history of the St. Louis area and discovered o be situated in an ancient earthquake belt. While the ter's long quiescent history gave small cause for any rm, it still reinforced the Maybeck-Dewell argument for ncrete construction which would last and be least affected any possible movement of the earth's surface.

While Principia has yet to encounter its first earthquake d does not expect one, its concrete construction has given nore immediately practical demonstration of its use. Its intenance costs, particularly for repairs, are, on the word the college comptroller, quite low.

The great log-burning fireplace in Rackham Court has a concrete smoke-hood. Overhead are cast-in-place concrete roof trusses supporting the concrete beam and slab roof.

Board-marked concrete walls are left exposed just as they came from the forms in this stairwell of Rackham Court, a dormitory for men.

The clean-cut lines and balanced design of the Davis Precision Machine Co., Los Angeles, Calif., are indicative of the workmanship of the products handled in the plant. Murray Erick Associates, structural and industrial engineers, O. W. Karn, general contractor, both of Los Angeles.

The Davis Precision Machine Co.

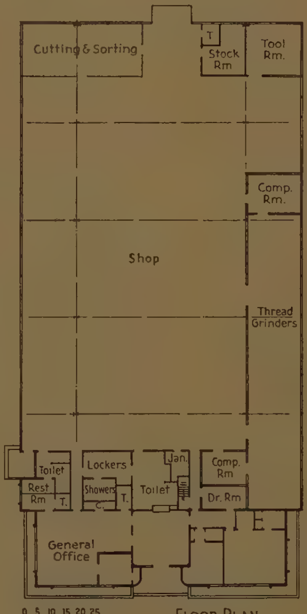
—Los Angeles, Calif.

By Murray Erick, Structural Engineer*

Many owners and designers of industrial plants realize the advantages of well-designed, attractive buildings. Such buildings have great advertising value, are good morale builders and add to the prestige of the community as well as of the occupant. Philip Davis, owner of the Davis Precision Machine Co., wanted such a plant on his property, which was located on one of the main thoroughfares leading into the heart of Los Angeles. Another requirement was that the factory section of the building, by far the greater portion, be provided with an abundance of natural light; consequently, the walls had to consist largely of glass.

As finally developed the plant was designed with a one-story office and administrative portion, 89x27 ft., across the front, and a higher factory section, 100x173 ft., in back of this, giving overall dimensions of 100x200 ft. The front portion is architectural concrete; the factory section has a structural steel frame with walls of concrete to the sill line and with glass in steel sash to the cornice.

The main entrance was placed at the center of the front section with doors recessed 6 ft. and corners of the entrance walls curved to widen the opening. A cantilevered canopy over the doorway gives a sun- and rain-sheltered, inviting entrance. Panels of corrugated, stippled structural glass are placed on either side and above the doors. These give privacy, reduce glare and produce better light diffusion in the reception room just inside the doorway.



Floor Plan

Provision was made in designing the building for future additional office space in the second story above the reception room. At the time of construction it was not desired to finish the room but it did seem desirable from the standpoint of the building's architecture to run the walls up to the future roof level, as shown in the photographs and accompanying drawing. Eventually the area will be roofed over.

The walls of the building are supported on skin-friction, cast-in-place concrete piles of 16-in. dia., varying in length from 10 to 22 ft. The four steel trusses spanning the factory area are supported on eight free-standing columns on individual footings. This foundation design resulted in a substantial saving over conventional spread-type footings.

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*Los Angeles, Calif.

Recessed doorway, curved walls and cantilevered canopy produce an attractive entrance to the administrative portion of the plant.

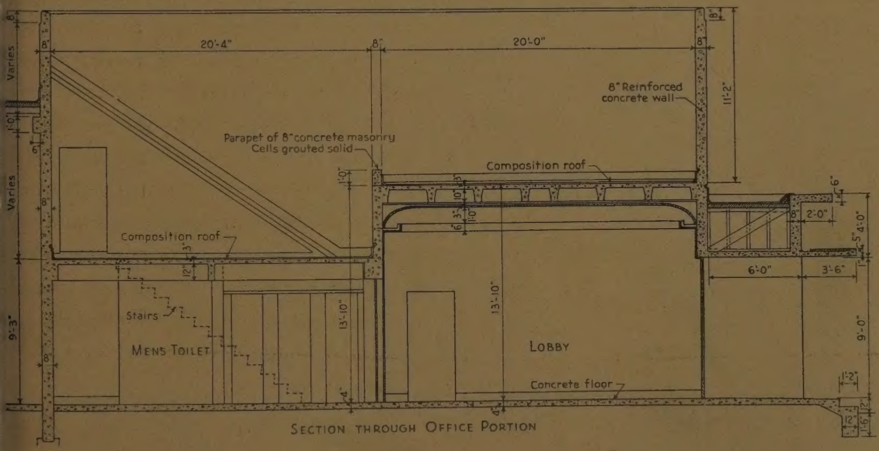
The groups of windows in the front section of the building are framed by concrete moldings projecting 6 in. from the face of the wall.

Locker and toilet rooms are placed along the front of the tory section with access from both the factory and office tions. A mezzanine over these rooms provides space for chanical equipment.

The architectural concrete walls have smooth surfaces sulting from casting the concrete in plywood forms. The ndows in the office section and one group of windows in factory section are set in a molding projecting 6 in. beyond the wall surface. These projections, combined with the de cornices and entrance canopy, give deep shadows and eresting play of light and dark areas on the plain, smooth lls. The facing and cornice over the window heads of the tory portion are sheet metal painted to match adjoining as. The concrete is painted with buff-tinted portland ment paint, the metal window sash with dark blue-gray. To improve comfort and see-ability of the men working at precision machining, the windows in the factory section were provided with special glass in a blue color. This glass reduces the transmission of solar heat to the interior and also reduces glare.

The owner's private office has walls finished in mahogany Flexwood. Walls in other parts of the office area have Flexwood wainscot and plaster above. Office floors are asphalt tile; factory floor is concrete.

The building, constructed at a cost of slightly less than \$100,000 or about \$5 per sq.ft., was designed by Murray Erick Associates, structural and industrial engineers of Los Angeles. O. W. Karn of Los Angeles was general contractor.



SECTION THROUGH OFFICE PORTION

Beg Your Pardon

E. L. Malvaney, architect in Jackson, Miss., did not tell us we spelled his name wrong in the last issue of ARCHITECTURAL CONCRETE but we apologize anyway.

Architectural Concrete in Minnesota

By Louis Pinault, Architect*

The extreme temperature range in Minnesota was considered in selecting architectural concrete for the Foley High School addition. Louis Pinault, architect, St. Cloud, Minn.

This article tells something of my experience with architectural concrete construction in the state of Minnesota. As most people know, Minnesota shares a boundary line with Canada and we are used to plenty of below-zero weather during the winter.

I mention these rather obvious facts because I wish to disabuse anyone who may still think architectural concrete is not suitable for building in this region. It *is* suitable; it has been *successfully* used; and we are *building* with it *today*.

The use of architectural concrete was not widespread in Minnesota 10 to 15 years ago. That situation is rapidly being changed. More and more the builders of our communities are turning to the use of architectural concrete.

To see the extent to which this material is being used even when some other materials would seem the natural choice, let us consider the school additions built at Becker and Foley, Minn. Here the original buildings had been built of another material. In both instances, it was necessary to convince the school board of the superior results that could be obtained with reinforced concrete. Our clinching argument here was that in building with concrete we were providing the most economical construction and using the maximum of local labor.

When designing buildings for Minnesota one must always consider the extreme temperature range of our climate. The very low temperature outside in winter and the warm, sometimes moist air within create design problems regardless of building material. I believe, however, that these problems are more easily solved with architectural concrete than any other construction medium because air and moisture leakage can be controlled more easily.

The severity of our winters was considered carefully in the wall construction of the Becker school auditorium. The 8-in. concrete walls were provided with a 1-in. blanket-type insulation between 2x2-in. furring strips over which were applied two coats of plaster on metal lath.

To guard against dry-rot and buckling of the wood floor, special precautions were taken. A subfloor of concrete was first laid which was given a bituminous mopping. Rough flooring was placed over 2x2-in. wood sleepers; then the finish maple floor was laid. The air space formed by the sleepers between concrete subfloor and wood flooring was given ventilating outlets at the sidewalls behind the baseboard to insure free circulation of air.

The Becker school auditorium was one of the first Minnesota buildings to use reinforced concrete rigid frames in roof construction. The frames, 22 ft. on centers, span the narrow way of the combined auditorium-gymnasium, which is 57 ft. wide. The stage with a 40 ft. proscenium is centered on the long side of the room. This necessitated framing center roof girder into the proscenium girder.

In building the Foley school addition we anticipated a particularly severe moisture-condensation problem. Besides providing blanket insulation and furring for the walls, as was done in the Becker auditorium, a vapor seal of waterproof paper was placed on the furring strips between the plaster and the insulation. This prevented infiltration of water vapor through the plaster and insulation, where it might condense against the outside wall and deteriorate the insulation or at least nullify its value. Highly satisfactory results were obtained.

It is anticipated that the older structure at Foley will shortly be replaced by more modern construction of archi-

According to Architect Pinault firesafety and economy were determining factors in the choice of architectural concrete for this store and hotel building in Montevideo.

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*St. Cloud, Minn.

tural concrete. The present addition increased pupil pacity by 210, added classrooms, laboratories, activity d rest rooms, and offices. The exterior has a pleasing nmetry of design noted in the balance of its two entrances d the placement of the classroom windows. Both en- nces have small cantilevered canopies, high mullioned ndows, recessed between fairly deep reveals, and the ool's name incised by wood molds at parapet level. ly the simplest ornamental detail has been used.

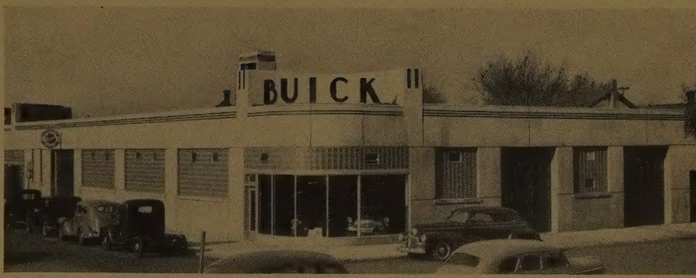
At Foley we used crushed granite for coarse aggregate d natural sand; at Becker, washed sand and gravel. In h case the aggregate was graded into fine, medium and arse stockpiles with 1½-in. maximum size material. Hav- three gradations of aggregate instead of the cus- mary two enabled the foreman to maintain easily a uni- m mix. Plasterer's sand was added to the sand on both s to make up for deficiency in fine material passing a -mesh sieve. Concrete was placed by hoist and buggies d was hand spaded. To get an even surface, free from ne pockets, the filled forms were pounded with rubber- vered mallets. Both projects received a grout cleandown ish.

Private enterprises as well as public agencies in Minne- a are taking advantage of the economy and other desir- le qualities of architectural concrete. An example is a partment store and hotel building in Montevideo built a cost of $150,000 and having 30,000 sq.ft. of usable or space for the store and 6,400 sq.ft. for the hotel. The ilding is occupied by Montgomery Ward and the Hunt otel. The site is on a steep hill whose slope is such that ere are three stories above grade in front and five at the ar. The structure was originally planned as a one-story re building. During construction the owner decided to d two stories to provide for a hotel as well.

This called for some adjustment of the plans, but the aptability of concrete is such that we were able to proceed thout any delay in building. As fast as one floor slab rdened, construction work proceeded both above and low it. In fact the department store on the first floor was operation before the two succeeding hotel floors were ished.

Another privately financed structure is the Buick garage St. Cloud, which Megarry Bros., contractors, built and n.

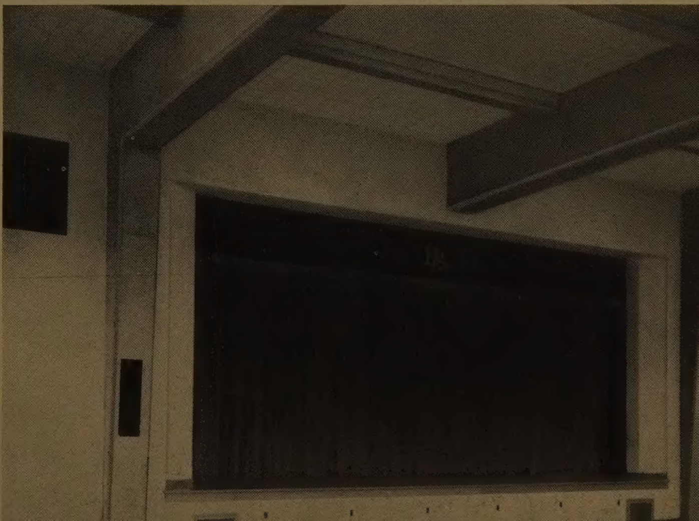
This building cost $60,000, has a total of 18,216 sq.ft. floor area, and can house 65 cars. Since it occupies the tire block width, there was an excellent opportunity to ovide two fine rounded plate glass show windows at the eet corners. All other windows are of glass block, which find particularly well adapted for use with architectural ncrete in commercial buildings. Control joints were provided at the corners of the openings below the sill line and at the centers of most openings in the spandrels above the window and door heads. This seems to be the most effective location of control joints because the tendency for the wall to crack is greater near the grade line than it is higher up. In most cases control joints start working before the building is completed and prevent formation of cracks where they are not wanted.


In the Megarry Buick garage, St. Cloud, the architect provided for volume change by locating control joints at the corners of openings below the sills and on centerlines above.

A recent development in architectural concrete which is being used extensively in Minnesota, particularly for one-story industrial buildings, is tilt-up construction. This was brought about largely by the shortage of form lumber; but because this method of construction, in which the concrete walls are cast flat and tilted up into position, has proved so satisfactory and economical, it seems likely to continue in use for buildings of certain types.

I first conceived the idea of tilt-up construction for the Holes-Webway Co. plant in St.Cloud.* By this means it was possible to proceed with the building, which otherwise could not have been constructed. Less than 1,000 f.b.m. of lumber was used to build 2,650 sq.ft. of wall. An estimated saving of $2,000, or 30 cents per sq.ft. of floor area, was made as compared with usual methods of construction. This is too much to ignore in these days when every corner must be cut if needed construction is to go ahead.

Rigid frame construction was used in the Becker School auditorium.



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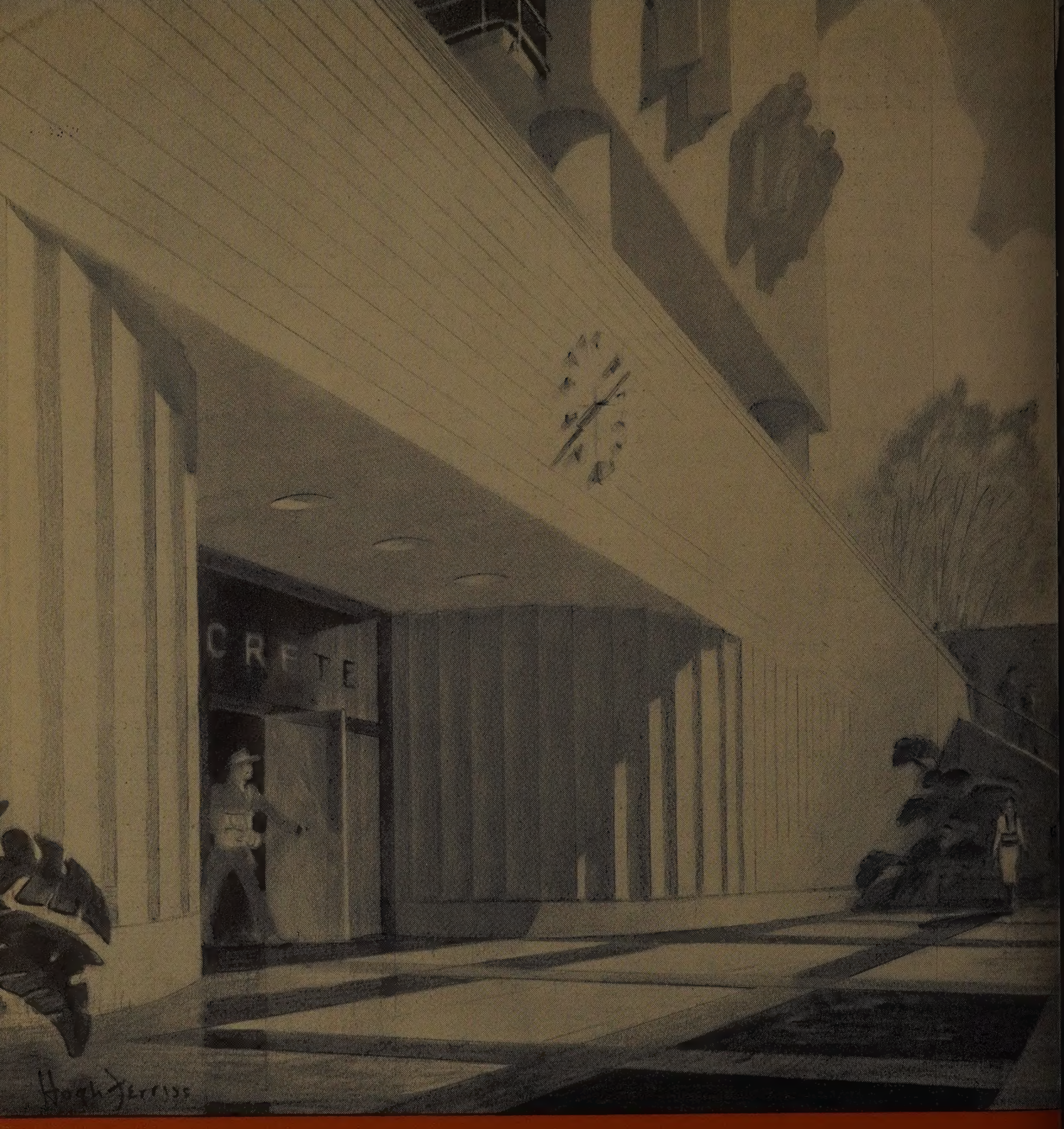
*Complete information available from Portland Cement Association.



ARCHITECTURAL CONCRETE

Whatever design effect an architect may conceive can be executed economically in firesafe Architectural Concrete. Here, in the second of a series illustrating the adaptability of Architectural Concrete, Hugh Ferriss shows entrance detail applicable to apartment houses, hospitals, schools or industrial buildings.

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